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Determinants of Financial Deepening in Mexico: A Dynamic Panel Data Approach

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ABSTRACT

This paper aims to study the determinants of financial deepening (FD) in Mexico. FD is measured as the fraction of total credit assigned to private sector as a proportion of GDP. The explanatory variables include: enforcing contracts (rule of law) and institutions; bank regulation; bank competition; formal labor; and financial literacy, among others. The data contains information of each State of the Mexican Republic. The model estimation is performed by using ordinary least squares (OLS), robust least square (RLS) with several weights functions (to deal with outliers), and a dynamic panel model (DPM) estimated with the generalized method of moments (GMM). The main findings are that: 1) the rule of law, 2) financial savings, and 3) financial education are the main determinants of financial deepening in Mexico.

Keywords: Financial deepening; factors affecting financial deepening; econometric modeling; Mexico.
JEL classification: G00; C5; G38.

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Determinantes de la Profundad Financiera en México: Un Enfoque de Datos De Panel Dinámico

RESUMEN

Este trabajo tiene como objetivo estudiar los determinantes de la profundad financiera (PF) en México. La PF se mide como el crédito total asignado al sector privado como proporción del PIB. Las variables explicativas incluyen: cumplimiento de contratos (estado de derecho) e instituciones; regulación bancaria; competencia bancaria; trabajo formal; y educación financiera, entre otros. Los datos contienen información de cada Estado de la República Mexicana. La estimación del modelo se realiza mediante el uso de mínimos cuadrados (MCO), mínimos cuadrados robustos (MCO) con varias funciones de ponderación (para tratar con valores atípicos) y un modelo de panel dinámico (MDP) estimado con el método generalizado de momentos (MGM). Los principales hallazgos son que: 1) el estado de derecho, 2) el ahorro financiero, y 3) la educación financiera son los principales factores determinantes de la profundización financiera en México.

Palabras claves: profundad financiera; factores que afecta la profundización financiera; modelación econométrica; México.
Clasificación JEL: G00; C5; G38.

1. Introduction

Mexico represents one of the strongest emerging economies in Latin America and it expects to enhance its economic growth and welfare levels in the next decades. In Mexico banking competition shows a very high level of concentration. This concentration is stronger in the credit card and loans. However, in distant places of the countryside, credit alternatives are nonexistent, excluding more than 30 million people. One of the most important actions in order to reach this goal is to make accessible for most of the population the different services offer from the financial sector, including more credit for the private agents, with the purpose of creating an inclusive and liquid financial atmosphere, which is known as financial deepening. Financial deepening in Mexico is still lower compared with other similar economies; being very far from the industrialized ones. These facts encourages carrying out a study to find out why this is happening. Thus, the first step is to determine what factors could lead to boost and/or enhance financial deepening in Mexico. The second step is to attain a suitable regulation that encourages transparency, efficiency, and legal security (rule of law and institutions) for all the parties.

Financial deepening has to do with increasing the accessibility to financial services for all agents, foreign and domestic (individuals, households, investors, micro-entrepreneurs, small and medium firms, etc.). The specialized literature in this subject provides empirical evidence through a great number of investigations of many countries that financial deepening has a significant impact in: sustaining economic growth, mitigating systemic risk, lowering poverty, and reducing inequality levels. In the Mexican case is expected, in the short term, that improving financial deepening will lead to: financing the Small and Medium Enterprises (SME); boosting GDP, reducing vulnerability, enhancing stability, strengthening the banking sector, diversifying the financial sector, improving risk management, reinforcing regulation, and alleviating poverty in some extent.

As previously mentioned, financial deepening in Mexico is lower compared with other similar economies, which encourage carrying out a whole analysis that helps explaining why this is happening. In this regard, this paper inquires about the determinants of financial deepening in Mexico if any. As a proxy of financial deepening, as customary, it will be taken the total credit assigned to private sector as a proportion of GDP, which, in turn, may impact GDP growth (Levine, 1997, and Patrick, 1966). Other objective of this research is to provide policy recommendations that enable policy designers to shape a virtuous circle between financial deepening and GDP growth. In this regard, there is an extensive empirical literature about a positive association between financial deepening and economic growth, see for instance: King and Levine (1993); Levine and Zervos (1998); Levine *et al*. (2000); Loayza and Rancière (2006); and Venegas-Martínez *et al*. (2009). In addition, the relationship between the deepening of the financial system and the accumulation of physical capital has been analyzed by King and Levine (1993) and Levine and Zervos (1998). Also, Patrick (1966), and Greenwood and Jovanovic (1990) find empirical evidence of a positive relationship between real income growth and demand for financial services. It seems to be that in the specialized literature there is a general consensus that a deeper financial system contributes to a higher rate of long-term economic growth. In this research, we examine the determinants of financial deepening for the Mexican case. To do this, we analyze explanatory variables such as: enforcing contracts (rule of law); bank regulation; competition of commercial banks; informality in the labor market; financial savings, and financial literacy, among many others (La Porta *et al*. 1997, 1998; and Rajan and Zingales, 2003).

Regarding the literature about the determinants of financial deepening, we start out by mentioning the rule of law or the institutions. Institutions are defined by a comprehensive

set of laws and practices. These are the product of historical, political, economic and social interactions. Mexico is considered a country with an institutional quality that has to be improved when comparing it with other countries. This issue has been studied by Caballero (2006) and Hernandez (2010). These authors examine the execution of contracts in México in order to propose a set of recommendations to improve the business and financial environment. Another factor of financial deepening is the regulation (set of rules that seek the healthy functioning of markets). For instance, international evidence shows that countries with higher capital requirements have less financial development; there is a negative correlation between these two variables. In this context, in order to amend this situation in Mexico some measures have been implemented, such as: limits on deposit insurance, stricter capital requirements regulation, disclosure and improvement of accounting standards, credit bureaus, and the improvement of risk management systems.

Regarding bank concentration, the empirical literature suggests that this is higher in countries with low economic and financial level (Tinoco-Zermeño *et al*., 2014, and Beck *et al*., 2004 and 2008). Beck and Demirgüç-Kunt (2009) analyze banking competition in several countries finding concentration. In Mexico, the banking system is relatively concentrated. Currently, around 68% of total banking assets are concentrated in the five large banks. In particular, the concentration appears to be higher in markets where the participation of non-bank intermediaries is low and demand is relatively inelastic. The concentration is stronger in the credit card market and in loans for housing and automobiles. In this case, in Mexico, "Sofoles" (limited-object financial institutions) represent an alternative to banks, mainly, for people that do not have access to banking services.

Also, the degree of informality in the labor market is an important factor that may affect financial deepening. The informal economy includes illegal production that is hidden from public authorities to avoid paying taxes an contributions to social security; see in this regard, Schneider *et al*. (2010). Finally, it is important to point out that Mexico is among the countries with a high proportion of semi-formal firms and informal employees.

Regarding the level of income, when this is low it leads to a lesser propensity to save, resulting in lower financial penetration because the resources available for lending are scarce. Financial penetration is related to savings and credit decisions that require knowledge about the characteristics of the available financial products. An important number of studies have found empirical evidence for a strong correlation between education and participation of the population in the financial system; see, for example: Grinblatt *et al.* (2011), Christelis *et al.* (2006), and Cole *et al.* (2011).

According to the above literature, the potential determinants of financial deepening may be: institutional environment, banking regulation, banking concentration, labor informality, propensity to save, and financial education. Other independent variables that have been used in applications and theoretical frameworks related to financial deepening in developing countries are listed in Table 1. This investigation is aimed at assessing the impact of these factors on financial deepening for the Mexican case through several econometric models including a panel data approach.

This paper is organized in the following sections. In the next section, we present the econometric models to be estimated, data contains information for each State of the Mexican Republic. In the third section, we analyze the obtained empirical results. Finally, the fourth section provides conclusions, acknowledges limitations, and states some simple recommendations to expand financial deepening in Mexico.

2. Empirical Analysis

As customary, the financial deepening will be measured as the private sector credit as a proportion of GDP. This measure is adequate for the Mexican case since its banking sector has some important presence in the credit market. The used data contains information for each State of the Mexican Republic. The literature to measure financial deepening points to different indicators that will be considered in this research: the size of the credit market (King and Levine 1993; Beck *et al*. 2000); the development of the securities market (Levine and Zervos 1998; Beck and Levine 2004); the size of the assets or financial liabilities in the economy (King and Levine 1993, and Rousseau and Wachtel 2001); and the number of bank branches (Dehejia and Lleras-Muney 2007).

2.1. Econometric analysis by States of the Mexican Republic

This section presents, first, the econometric model that will be used to inquire about the determinants of financial deepening for Mexico. Specifically, it will be applied ordinary least squares (OLS) and robust least squares (RLS). Notice that the traditional OLS estimator is given by:

$$\hat{\beta}_{OLS} = \left(\sum_i X_i' X_i \right)^{-1} \left(\sum_i X_i' Y_i \right). \quad (1)$$

While un the RLS regression the residuals squared are replaced by a function that gives weights to outliers. In this case, the M-estimation method (the maximum likelihood estimation) determines the coefficients that maximize the sum of values of a function of the residuals:

$$\hat{\beta}_M = \arg\min_\beta \sum_{i=1}^{N} f\left(\frac{e_i(\beta)}{\sigma w_i} \right) \quad (2)$$

where S is a measure of the level of residuals and *c* is a positive constant associated with function *f*. The individual weights are given by $w_i = \sqrt{1 - X_i \left(X' X \right)^{-1} X_i'}$. The choices on the function *f* may be of any the following form: Andrews, bi-square, Welsch and Fair. This research applies Akaike's information criterion and tests of goodness of fit to choose the best function *f*, which is given by Welsch functional form:

$$f(x) \equiv \frac{c^2}{2} \left(1 - \exp\left(- \left(\frac{X}{c} \right)^2 \right) \right) \quad (3)$$

$$c = 2.985$$

2.2 Description of data

As we state before, most of the literature uses as a *proxy* of financial deepening total credit that is directed towards to the private sector as a proportion of GDP. The period of study is 2010-2014, and the frequency of the data is annual. The observations belong to 32 Federal Entities with information of five years in each. Thus, the total number of observations is 160. Most of the incorporated variables come from specialized literature as exposed in Table 1. The database is public information from: INEGI, BANXICO, "*Doing Business*", SHCP, CNBV,

CONACYT, CONAPO, SEP, ANUIES, SEGOB, SNIEG y SIICYT. Since most of the literature uses as a *proxy* of financial deepening total credit that is directed towards to the private sector as a proportion of GDP, then the independent variables are constructed as the ratio between total credit to the private sector per State and its corresponding State GDP. Table 2 depicts the descriptive statistics of all the independent variables used in this research, and provides the mean, median, maximum, minimum, standard deviation, skewness and kurtosis. Half of them have a large kurtosis, that is, the empirical distributions have high peaks, and most of them show some degree of skewness. In order to deal with these characteristics, we will apply robust least square (RLS) in difference of logarithms with a weight function, specifically the Welsch function.

Table 1: Investigations related to the independent variables under study

Independent variables (in Dlog)	**Papers that use these variables in applications and theoretical frameworks related to financial deepening**
Competition in notarial services (Institutional environment)	Ncube (2007)
Perception of corruption in government acts (Institutional environment)	Ncube (2007)
Illiteracy	Kurihara (2013)
New students at the undergraduate level (Human capital)	Baharumshah and Almasaied (2009); Adan (2017).
Coefficient of income inequality	Goodness C. A. (2013); Muritala and Fasanya (2013); Abosedra *et al*. (2016).
Starting a Business (New entrepreneurs)	King and Levine (1993b).
Registering a property (Institutional environment)	Ncube (2007)
Taxes, obligations, products, developments and improvements contributions as a percentage of total revenue.	Tatom and Ott (2006).
Employed in the informal sector (Underground economy)	Gobbi and Zizza (2012).
High efficiency in finishing undergraduate education (Human capital)	Baharumshah and Almasaied (2009); Adan (2017).
Absorption in higher education (Human capital)	Baharumshah and Almasaied (2009); Adan (2017).
Economic diversification (At industrial level)	Rajan and Zingales (1998).
Public debt	Altaylıgil and Akkay (2013).
Labor income	Donatella and Moranaxo (2016).
Savings	Gelbard and Leite (1999); Reinhart and Tokatlidis (2003).
Air freight	World Bank (1997).
Foreign direct investment	Gelbard and Leite (1999); Reinhart and Tokatlidis (2003); Baharumshah and Almasaied (2009).
Exports	Gries *et al*. (2008); Huang and Temple (2005).
Tourism Revenues_Source	Kumar (2013).
Researchers (Human capital)	Baharumshah and Almasaied (2009).
Scientific and technological Companies (Human capital)	Baharumshah and Almasaied (2009).
Population	Ng'ang'a (2016).

Source: Authors' own elaboration.

Table 2: Descriptive statistics of independent variables

	Total Credit to Private / GDP State Sector	Enforcing Contracts	Competition notary services	Perception of corruption in government acts	Illiteracy	New students at the undergraduate level	Schooling
Mean	6.82	0.40	4.00	85.25	6.78	23247.06	8.81
Median	5.89	0.39	3.97	85.19	5.45	16456.00	9.01
Maximum	31.27	0.74	11.15	95.28	19.00	95399.00	11.23
Minimum	0.39	0.01	0.80	65.02	1.90	5284.00	6.21
Std. Dev.	5.44	0.17	2.30	6.34	4.23	20782.51	0.95
Skewness	2.36	0.09	1.10	-0.99	1.24	2.14	-0.34
Kurtosis	9.99	2.29	4.44	4.53	3.87	7.24	3.38
	Coefficient of income inequality*	Starting a Business	Registering a property	Own income of States	High efficiency terminal	Absorption in higher education	Economic diversification
Mean	0.88	31.73	46.89	7.91	61.83	86.37	706.72
Median	0.83	30.21	48.87	6.32	62.10	86.34	701.50
Maximum	2.25	64.48	89.20	41.15	73.15	130.35	935.00
Minimum	0.33	4.83	4.27	2.60	48.54	38.15	533.00
Std. Dev.	0.39	13.17	20.79	5.94	5.08	18.57	105.44
Skewness	1.11	0.15	0.05	3.72	0.04	-0.30	0.54
Kurtosis	4.57	2.40	2.39	18.98	2.52	2.67	2.61
	Public debt per capita	Average labor income	Attracting savings	Air traffic	Air cargo	Foreign direct investment (net)	Exports
Mean	2532.20	5356.18	9.19	66.06	3183.67	1.05	27.41
Median	1910.96	5209.47	5.77	35.26	867.64	0.55	17.29
Maximum	12711.51	8537.06	37.27	306.19	14292.60	6.49	139.33
Minimum	0.00	3102.99	0.33	0.00	0.00	-0.42	0.20
Std. Dev.	2281.85	888.01	9.36	76.19	3880.46	1.32	30.39
Skewness	2.05	0.47	1.50	1.95	1.28	1.99	1.77
Kurtosis	8.03	4.08	4.65	6.25	3.73	7.18	6.07
	Tourism Revenues	Researchers	Companies and scientific and technological institutions	Total_Conapo population	Availability_of_ATMs	Absorption_University_studies	Revenue_Men
Mean	3.09	29.93	13.58	3567528.00	4.76	86.37	5669.24
Median	1.70	20.81	11.75	2753839.00	4.12	86.34	5540.04
Maximum	21.73	154.67	39.40	15963068.00	11.10	130.35	9072.18
Minimum	0.77	3.30	1.75	615963.00	1.64	38.15	3049.19
Std. Dev.	4.28	29.19	7.80	3005696.00	2.13	18.57	966.08
Skewness	3.15	2.78	0.83	2.19	0.75	-0.30	0.37
Kurtosis	12.18	11.09	3.52	8.79	2.81	2.67	4.24

Source: Authors' own elaboration.

Table 3 shows the results of the OLS estimates. For the sake of clarity, the source is put in front of the variable in the results of Table 3. The dynamics of the dependent variable for each State of Mexican Republic are shown in Appendix A.

According to Table 3, the OLS model provides a set of determinants of financial deepening that are statistically significant with the following results. If enforcing contracts increases by 1%, then total credit to the private sector improves 0.32%. If income inequality increases 1%, then the total credit to the private sector rises 0.65%, indicating concentration of income. If informal employees rise by 1%, the total credit to the private sector decreases 1.6%, which agrees with the specialized literature indicating that a large informal sector affects financial deepening since agents do not have collaterals to apply for credits.

Table 3: Factors of Financial Deepening (OLS)

Dependent variable: Total Credit to Private / GDP State Sector Variables specified in *Dlog*	
Enforcing Contracts_Source: Doing Business	0.316095***
	(0.078146)
Competition in notarial services_Source: SEGOB, Bancos Jurídicos Intergubernamentales	-0.024901
	(0.029143)
Perception of corruption in government acts_Source: INEGI, ENCIG	-0.422956
	(0.337525)
Illiteracy_Source: SEP, Sistema Nacional de Información Educativa	-0.058543
	(1.342101)
New students at the undergraduate level_Source: ANUIES	0.019114
	(0.059357)
Coefficient of income inequality_Source: INEGI, ENOE	0.650819*
	(0.355155)
Starting a Business_Source: Doing Business	-0.050428
	(0.076802)
Registering a property_Source: Doing Business	-0.181611
	(0.199973)
Taxes, obligations, products, developments and improvements contributions as a percentage of total revenue_Source: INEGI, Statistics State and Municipal public finances	-0.039511
	(0.085330)
Employed in the informal sector_Source: INEGI, ENOE	-1.583246**
	(0.773406)
High efficiency terminal_Source: SEP, National Education Information System	-0.351169
	(0.598203)
Absorption in higher education_Source: SNIEG	0.07576
	(0.363634)
Economic diversification_Source: INEGI, DENUE	-0.1195
	(0.276927)
Public debt per capita_Source: SHCP	-7.73E-07
	(1.08E-05)
Average labor income_Source: INEGI, ENOE	-0.700798
	(0.924045)
Attracting savings_Source: CNBV	-0.002039
	(0.022402)
Air traffic_Source: SCT	0.000672
	(0.000802)
Air cargo_Source: SCT	-0.0000142
	(1.08E-05)
Foreign direct investment (net) _Source: Ministry of Economy	-0.008229
	(0.020446)
Exports_Source: INEGI	0.106164
	(0.113176)
Tourism Revenues_Source: Banxico	-0.045818
	(0.402634)
Researchers_Source: CONACYT	0.283746
	(0.509265)
Companies and scientific and technological institutions_Source: SIICYT	0.040213
	(0.389604)
Total_Conapo population_Source: CONAPO	-1.674373
	(3.807512)
Constant	2.58705
	(1.754320)

Notes: Standard errors in parentheses. Level of significance: (*) p <0.1, (**) p <0.05 and (***) p <0.01.
Source: Estimation with public data, the specific source is showed in front of each variable.

On the other hand, the estimation results from RLS are shown in Table 4. It is observed that the determinates of financial deepening that are statistically significant are: 1) rule of law (the enforcing contracts) and institutional environment; 2) propensity to save; 3) average labor

income; 4) income inequality; 5) total population_*t*–1; and 6) financial education; 7) researchers_*t*–1; 8) scientific and technological institutions_*t*–1; 9) banking regulation and banking concentration; 10) starting a business as a *proxy* of financial restrictions; 11) labor informality; 12) foreign direct investment_*t*–1; 13) exports_*t*–1; 14) income from tourism_*t*–1; and 14) air traffic_*t*–1. These variables are statistically significant and influence the dependent variable. In particular, the results support that formal markets upholds financial deepening. That is, formal labor has positive and significant impact on financial deepening.

Table 4: Determinants of Financial Deepening (RLS)

Dependent variable: Total Credit to Private / GDP State Sector Robust Least Squared Estimation	
log (Enforcing Contracts)	-0.110675***
	(0.029718)
log (Competition notary services) _*t*–1	0.026483
	(0.024733)
log (Schooling)	0.390549
	(0.256243)
log (Coefficient of income inequality)	-0.140049*
	(0.080464)
Starting a Business	-0.004141***
	(0.001447)
log (Registering a property)	-0.008179
	(0.030950)
log (Own income of States)	0.080269*
	(0.044785)
log (Employees in the informal sector)	0.138612
	(0.191479)
Dlog (Terminal efficiency in school) _*t*–1	0.910932***
	(0.260811)
Public debt per cápita_*t*–1	-0.0000181**
	(8.06E-06)
log (Average labor income)	-1.22174***
	(0.213680)
log (Attracting savings) _*t*–1	-0.042983***
	(0.016277)
Air traffic_*t*–1	0.002263***
	(0.000473)
Load aérea_*t*–1	-0.0000174**
	(7.45E-06)
Foreign direct investment (net) _*t*–1	0.028315**
	(0.012296)
Dlog (Exports) _*t*–1	0.222857***
	(0.076967)
Dlog (Income from tourism) _*t*–1	-0.727858***
	(0.172026)
Dl (Researchers) _*t*–1	-0.807555***
	(0.276170)
Dlog (Companies and scientific and technological institutions) _*t*–1	0.783196***
	(147350)
Log (Total_Conapo Population)	-0.049509**
	(0.025704)
Constant	9.595021***
	(1.919993)

Notes: Standard errors in parentheses.
Level of significance: (*) p <0.1, (**) p <0.05 and (***) p <0.01.
Source: Estimation with public data.

In the sequel, this investigation will focus on Welsch function since Akaike's information criterion states that the best estimated model was such a function. Estimates from the fair or bi-square functions are less suitable due to a lower performance in their goodness

of fit. Notice now that although the goodness of fit of the estimates presented in Table 4 with RLS is better than that of Table 3 with OLS, some signs of statistically significant variables were contrary to what was expected. This was found in: enforcing contracts, starting a business, average labor income, attracting savings, and researchers. This is possibly because the indicators, at the time that the sample was taken, are inadequate and they need to be improved.

After applying the test of redundant fixed effects, we obtain that the null hypothesis is not rejected; see Table 5. Therefore, the panel model with fixed effects is not estimated.

Table 5: Test for fixed effects

Test	Statistics	d.f.	Prob.
Period F	0.882316	(1,42)	0.3529
Period Chi-square	1.330555	1	0.2487

Source: Estimation with public data.

It is important to point out that the individual effects are uncorrelated with the explanatory variables because the null hypothesis of the Hausman test is not rejected; see Table 6. Therefore, the panel cross-section with random effects model is more appropriate.

Table 6: Hausman test correlated random-effects

	Statistics Chi-Sq.	Chi-Sq. d.f.	Prob.
Cross-section random	6.712107	16	0.9784

Source: Estimation with public data.

We will address the issue of endogenity of the variables through a dynamic panel model in the next section.

2.2 Dynamic Data Panel, System Generalized method of moments (GMM)

This section analyzes a dynamic data panel model. The following specification will be used to control for endogenity:

$$TCPS\_GDP_{i,t} - TCPS\_GDP_{i,t-1} = \delta + \gamma X_{i,t} + \beta' Z_{it} + u_{i,t} \quad (4)$$

where $TCPS\_GDP_{i,t}$ is total credit to the private sector as a percentage of GDP by State of the Mexican Republic for the period 2010-2014, *X* stands for the vector of factors of financial deepening, and *Z* is the vector of control variables. The model follows the methodology GMM dynamic panel (Arellano and Bond, 1991). Table 7 shows the estimates by GMM system from the dynamic panel specification.

Table 7. Estimates by GMM system from the dynamic panel

Dependent variable: DLCREDBAN_GDPSTATE Instruments: LCREDBAN_GDPSTATE-3; TOTALPOBCONAPO-1; LOWINCOMESTATE-1; UNIDECON,-1	
Variable	Coefficient
LBANCRED_GDPSTATE(-1)	0.60178 (0.73669)
DL(Enforcing_Contracts)	2.37641** (1.019668)
DL(Property_registration)	0.739694 (1.397809)
Availability_of_ATMs	0.028004 (0.032317)
DL(Absorption_University_studies)	1.739272** (0.739072)
DL(Revenue_Men)	-0.926712 (1.103514)
DL(Coefficient_income_inequality)	-1.045284** (0.454715)

Notes: Standard errors in parentheses.
Level of significance: (*) p <0.1, (**) p <0.05 and (***) p <0.01.
Source: Estimation with public data.

From Table 7, it is observed that if the explanatory variable "enforcing contracts" increases by 1%, then the total credit to the private sector rises 2.4%, which is the *proxy* of financial deepening. This indicates that the rule of law and institutions are important for financial deepening in Mexico by States and for the whole country in the analyzed period. Also, financial education has a positive impact on financial deepening in Mexico. If financial education rises 1%, then the total credit to the private sector increases 1.7%. Finally, other important determinant of financial penetration is the savings level (taking as a *proxy* the coefficient of inequality income). This indicates that if the savings level rises 1%, then the financial deepening decreases 1.04%. Summarizing, the main determinants of financial deepening in Mexico are: 1) rule of law and institutions, 2) financial education, and 3) savings level.

3. Conclusions

We have estimated several econometric models, including a dynamic panel data approach. The data contains information for each State of the Mexican Republic. The explained variable was total credit assigned to the private sector as a proxy of financial deepening. The empirical evidence presented throughout this document shows that the main determinants of financial deepening are: rule of law or institutions; bank regulation; banking competition; formal labor; saving propensity, and financial education. It is worth mentioning that this research is innovative because we did not find another paper that addresses the issue with a panel data model by State. That is, the analysis incorporates all information available by the States of the Mexican Republic.

Although, there has been a noticeable improvement in financing conditions in Mexico in recent years, it is necessary that economic policy focuses on increasing financial deepening in all States of the Mexican Republic, mainly in the poorest. The recent financial reforms and financial inclusion programs may contribute to reach a greater financial deepening if a full strategy is designed considering all the obtained determinants in this research. This will improve economic growth rates in the States, and in general in Mexico. We insist that policy has to focus efforts on rule of law and institutions, increase financial education, and augment

savings levels, possible by adjusting interest taxes without interfering with the objectives of monetary policy.

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Appendix A. Dependent Variable by State of Mexican Republic